Amendments to the Claims:

The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) A method for controlling one or more wafer properties in a semiconductor processing tool using data collected from an in situ sensor, where at least one of said one or more wafer properties comprises within-wafer uniformity, said method comprising the steps of:

(1) setting recipe parameters relating to said one or more wafer properties according to a process model, wherein said model is used to predict wafer outputs;

(2) executing a process on a wafer with the tool according to said recipe parameters;

(3) collecting data relating to said one or more wafer properties during execution of said process with said in situ sensor;

(4) adjusting said process by modifying said recipe parameters according to comparisons between said data collected by said in situ sensor relating to said one or more wafer properties and results predicted by said model; and

(5) using said data collected by said in situ sensor in a process on a subsequent wafer to be executed by the tool.

2. (Previously Presented) The method of claim 1, wherein said one or more wafer properties comprises wafer thickness.

3. (Original) The method of claim 1, wherein said tool comprises a polishing device.

4. (Original) The method of claim 1, wherein said tool comprises a plurality of processing resources, each of which includes an in situ sensor, and wherein data from one in situ sensor may be forwarded to another processing resource in real time during execution of said process.

5. (Original) The method of claim 1, further comprising the step of collecting data from an inline sensor; and

integrating said data collected from said inline sensor with said data collected from said in situ sensor before processing said subsequent wafer.

6. (Original) The method of claim 5, wherein data collected from said inline sensor is utilized to calibrate said in situ sensor.

7. (Original) The method of claim 1, further comprising the step of collecting data from a sensor located at an upstream tool; and

integrating said data collected from said upstream tool with said data collected from said in situ sensor before processing said subsequent wafer.

8. (Original) The method of claim 7, wherein data collected from said upstream tool is utilized to calibrate said in situ sensor.

9. (Original) The method of claim 1, wherein said parameters include a processing time.

10. (Original) The method of claim 1, wherein said data collected by said in situ sensor is used for run-to-run control on subsequent wafers processed by said tool.

11. (Previously Presented) The method of claim 1, wherein said tool comprises a plurality of processing devices, each of which includes an in situ sensor, and wherein data from one in situ sensor may be compared with data from another in situ sensor in real time to compare results from each device.

12. (Previously Presented) A method for controlling one or more wafer properties in a semiconductor processing tool using data collected from an in situ sensor, where at least one of said one or more wafer properties comprises within-wafer uniformity, said method comprising the steps of:

(1) collecting data with said in situ sensor relating to said one or more wafer properties during a process executed according to wafer recipe parameters;

(2) adjusting said process by modifying said recipe parameters according to comparisons between said data collected by said in situ sensor relating to said one or more wafer properties and results predicted by a process model used to predict wafer outputs; and

(3) using said data collected by said in situ sensor in a process on a subsequent wafer to be executed by the tool.

13. (Original) The method of claim 12, wherein said step of adjusting comprises increasing or decreasing a processing time.

14. (Original) The method of claim 13, wherein said processing time comprises polishing time.

15. (Original) The method of claim 12, wherein said tool comprises a plurality of processing resources, each of which includes an in situ sensor, and wherein data from one in situ sensor may be forwarded to another processing resource in real time during execution of said process.

16. (Original) The method of claim 12, further comprising the step of collecting data from an inline sensor; and

integrating said data collected from said inline sensor with said data collected from said in situ sensor before processing said subsequent wafer.

17. (Original) The method of claim 12, further comprising the step of collecting data from a sensor located at an upstream tool; and

integrating said data collected from said upstream tool with said data collected from said in situ sensor before processing said subsequent wafer.

18. (Original) The method of claim 12, wherein said data collected by said in situ sensor is

used for run-to-run control on subsequent wafers processed by said tool.

19. (Previously Presented) A system for controlling one or more wafer properties, where at least one of said one or more wafer properties comprises within-wafer uniformity, comprising:

a semiconductor processing tool capable of executing a process for processing a wafer according to recipe parameters relating to said one or more wafer properties;

an in situ sensor configured to collect data relating to said one or more wafer properties during execution of said process; and

a processor useable for setting said recipe parameters according to a process model for predicting wafer outputs, wherein said processor is utilizable for adjusting said process by modifying said recipe parameters according to comparisons between said data collected by said in situ sensor relating to said one or more wafer properties and results predicted by said model, and wherein said processor uses said data collected by said in situ sensor in a process on a subsequent wafer to be executed by the tool.

20. (Previously Presented) The system of claim 19, wherein said one or more wafer properties comprises wafer thickness.

21. (Original) The system of claim 19, wherein said tool comprises a polishing device.

22. (Original) The system of claim 19, wherein said tool comprises a plurality of processing resources, each of which includes an in situ sensor, and wherein data from one in situ sensor may be forwarded to another processing resource in real time during execution of said process.

23. (Original) The system of claim 19, further comprising an inline sensor configured to collect data, wherein said data collected from said inline sensor is integrated with said data collected from said in situ sensor before processing said subsequent wafer.

24. (Original) The system of claim 23, wherein data collected from said inline sensor is

utilized to calibrate said in situ sensor.

25. (Original) The system of claim 19, further comprising a sensor located at an upstream tool configured to collect data, wherein said data collected from said upstream tool is integrated with said data collected from said in situ sensor before processing said subsequent wafer.

26. (Original) The system of claim 25, wherein data collected from said upstream tool is utilized to calibrate said in situ sensor.

27. (Original) The system of claim 19, wherein said parameters include a processing time.

28. (Original) The system of claim 19, wherein said data collected by said in situ sensor is used for run-to-run control on subsequent wafers processed by said tool.

29. (Original) The system of claim 19, wherein said tool comprises a plurality of processing devices, each of which includes an in situ sensor, and wherein data from one in situ sensor may be compared with data from another in situ sensor to in real time to compare results from each device.

30. (Previously Presented) A system for controlling one or more wafer properties, where at least one of said one or more wafer properties comprises within-wafer uniformity, comprising:

an in situ sensor for collecting data relating to said one or more wafer properties during a process executed by a semiconductor processing tool according to wafer recipe parameters;

a processor configured to adjust said process by modifying said recipe parameters according to comparisons between said data collected by said in situ sensor relating to said one or more wafer properties and results predicted by a process model used to predict wafer outputs; and

wherein said processor is configured to use said data collected by said in situ sensor in a process on a subsequent wafer to be executed by the tool.

31. (Original) The system of claim 30, wherein said processor is configured to increase or decrease a processing time of the tool.

32. (Original) The system of claim 31, wherein said processing time comprises polishing time.

33. (Original) The system of claim 30, wherein said tool comprises a plurality of processing resources, each of which includes an in situ sensor, and wherein data from one in situ sensor may be forwarded to another processing resource in real time during execution of said process.

34. (Original) The system of claim 30, further comprising an inline sensor configured to collect data, and wherein said inline sensor is adapted to integrate said collected data with said data collected from said in situ sensor before processing said subsequent wafer.

35. (Original) The system of claim 30, further comprising a sensor located at an upstream tool configured to collect data, and wherein said sensor is adapted to integrate said collected data with said data collected from said in situ sensor before processing said subsequent wafer.

36. (Original) The system of claim 30, wherein said data collected by said in situ sensor is used for run-to-run control on subsequent wafers processed by said tool.

37. (Previously Presented) A system for controlling one or more wafer properties in a semiconductor processing tool using data collected from an in situ sensor, where at least one of said one or more wafer properties comprises within-wafer uniformity, said system comprising:

means for setting recipe parameters relating to said one or more wafer properties according to a process model, wherein said model is used to predict wafer outputs;

means for executing a process on a wafer with the tool according to said recipe parameters;

means for collecting data relating to said one or more wafer properties during execution

of said process with said in situ sensor;

means for adjusting said process by modifying said recipe parameters according to comparisons between said data collected by said in situ sensor relating to said one or more wafer properties and results predicted by said model; and

means for using use said data collected by said in situ sensor in a process on a subsequent wafer to be executed by the tool.

38. (Original) The system of claim 37, wherein said one or more wafer properties comprises wafer thickness.

39. (Original) The system of claim 37, wherein said tool comprises a polishing device.

40. (Original) The system of claim 37, wherein said tool comprises a plurality of processing resources, each of which includes an in situ sensor, and wherein data from one in situ sensor may be forwarded to another processing resource in real time during execution of said process.

41. (Original) The system of claim 37, further comprising means for collecting data from an inline sensor; and

means for integrating said data collected from said inline sensor with said data collected from said in situ sensor before processing said subsequent wafer.

42. (Original) The system of claim 41, wherein data collected from said inline sensor is utilized to calibrate said in situ sensor.

43. (Original) The system of claim 37, further comprising means for collecting data from a sensor located at an upstream tool; and

means for integrating said data collected from said upstream tool with said data collected from said in situ sensor before processing said subsequent wafer.

44. (Original) The system of claim 43, wherein data collected from said upstream tool is

utilized to calibrate said in situ sensor.

45. (Original) The system of claim 37, wherein said parameters include a processing time.

46. (Original) The system of claim 37, wherein said data collected by said in situ sensor is used for run-to-run control on subsequent wafers processed by said tool.

47. (Original) The system of claim 37, wherein said tool comprises a plurality of processing devices, each of which includes an in situ sensor, and wherein data from one in situ sensor may be compared with data from another in situ sensor to in real time to compare results from each device.

48. (Previously Presented) A system for controlling one or more wafer properties in a semiconductor processing tool using data collected from an in situ sensor, where at least one or more wafer properties comprises within-wafer uniformity, said system comprising:

means for collecting data with said in situ sensor relating to said one or more wafer properties during a process executed according to wafer recipe parameters;

means for adjusting said process by modifying said recipe parameters according to comparisons between said data collected by said in situ sensor relating to said one or more wafer properties and results predicted by a process model used to predict wafer outputs; and

means for using said data collected by said in situ sensor in a process on a subsequent wafer to be executed by the tool.

49. (Original) The system of claim 48, wherein said means for adjusting comprises means for increasing or decreasing a processing time.

50. (Original) The system of claim 49, wherein said processing time comprises polishing time.

51. (Original) The system of claim 48, wherein said tool comprises a plurality of processing

resources, each of which includes an in situ sensor, and wherein data from one in situ sensor may be forwarded to another processing resource in real time during execution of said process.

52. (Original) The system of claim 48, further comprising means for collecting data from an inline sensor; and

means for integrating said data collected from said inline sensor with said data collected from said in situ sensor before processing said subsequent wafer.

53. (Original) The system of claim 48, further comprising means for collecting data from a sensor located at an upstream tool; and

means for integrating said data collected from said upstream tool with said data collected from said in situ sensor before processing said subsequent wafer.

54. (Original) The system of claim 48, wherein said data collected by said in situ sensor is used for run-to-run control on subsequent wafers processed by said tool.

55. (Withdrawn) A computer readable medium for controlling a wafer property in a semiconductor processing tool using data collected from an in situ sensor, said computer readable medium comprising:

computer readable instructions for setting recipe parameters relating to said wafer property according to a process model, wherein said model is used to predict wafer outputs;

computer readable instructions for executing a process on a wafer with the tool according to said recipe parameters;

computer readable instructions for collecting data relating to said wafer property during execution of said process with said in situ sensor;

computer readable instructions for adjusting said process by modifying said recipe parameters according to comparisons between said data collected by said in situ sensor relating

to said wafer property and results predicted by said model; and

computer readable instructions for using said data collected by said in situ sensor in a process on a subsequent wafer to be executed by the tool.

56. (Withdrawn) The computer readable medium of claim 55, wherein said property comprises wafer thickness.

57. (Withdrawn) The computer readable medium of claim 55, wherein said tool comprises a polishing device.

58. (Withdrawn) The computer readable medium of claim 55, wherein said tool comprises a plurality of processing resources, each of which includes an in situ sensor, and wherein data from one in situ sensor may be forwarded to another processing resource in real time during execution of said process.

59. (Withdrawn) The computer readable medium of claim 55, further comprising computer readable instructions for collecting data from an inline sensor; and

computer readable instructions for integrating said data collected from said inline sensor with said data collected from said in situ sensor before processing said subsequent wafer.

60. (Withdrawn) The computer readable medium of claim 59, wherein data collected from said inline sensor is utilized to calibrate said in situ sensor.

61. (Withdrawn) The computer readable medium of claim 55, further comprising computer readable instructions for collecting data from a sensor located at an upstream tool; and

computer readable instructions for integrating said data collected from said upstream tool with said data collected from said in situ sensor before processing said subsequent wafer.

62. (Withdrawn) The computer readable medium of claim 61, wherein data collected from said upstream tool is utilized to calibrate said in situ sensor.

63. (Withdrawn) The computer readable medium of claim 55, wherein said parameters include a processing time.

64. (Withdrawn) The computer readable medium of claim 55, wherein said data collected by said in situ sensor is used for run-to-run control on subsequent wafers processed by said tool.

65. (Withdrawn) The computer readable medium of claim 55, wherein said tool comprises a plurality of processing devices, each of which includes an in situ sensor, and wherein data from one in situ sensor may be compared with data from another in situ sensor to in real time to compare results from each device.

66. (Withdrawn) A computer readable medium for controlling a wafer property in a semiconductor processing tool using data collected from an in situ sensor, said computer readable medium comprising:

computer readable instructions for collecting data with said in situ sensor relating to said wafer property during a process executed according to wafer recipe parameters;

computer readable instructions for adjusting said process by modifying said recipe parameters according to comparisons between said data collected by said in situ sensor relating to said wafer property and results predicted by a process model used to predict wafer outputs; and

computer readable instructions for using said data collected by said in situ sensor in a process on a subsequent wafer to be executed by the tool.

67. (Withdrawn) The computer readable medium of claim 66, wherein said computer readable instructions for adjusting comprises computer readable instructions for increasing or decreasing a processing time.

68. (Withdrawn) The computer readable medium of claim 67, wherein said processing time comprises polishing time.

69. (Withdrawn) The computer readable medium of claim 66, wherein said tool comprises a plurality of processing resources, each of which includes an in situ sensor, and wherein data from one in situ sensor may be forwarded to another processing resource in real time during execution of said process.

70. (Withdrawn) The computer readable medium of claim 66, further comprising computer readable instructions for collecting data from an inline sensor; and

computer readable instructions for integrating said data collected from said inline sensor with said data collected from said in situ sensor before processing said subsequent wafer.

71. (Withdrawn) The computer readable medium of claim 66, further comprising computer readable instructions for collecting data from a sensor located at an upstream tool; and

computer readable instructions for integrating said data collected from said upstream tool with said data collected from said in situ sensor before processing said subsequent wafer.

72. (Withdrawn) The computer readable medium of claim 66, wherein said data collected by said in situ sensor is used for run-to-run control on subsequent wafers processed by said tool.

73. (Previously Presented) A method for controlling within-wafer uniformity in a semiconductor processing tool using data collected from an in situ sensor, said method comprising the steps of:

(1) setting recipe parameters relating to said within-wafer uniformity according to a process model, wherein said model is used to predict wafer outputs;

(2) executing a process on a wafer with the tool according to said recipe parameters;

(3) collecting data relating to said within-wafer uniformity during execution of said process with said in situ sensor;

(4) adjusting said process by modifying said recipe parameters according to comparisons between said data collected by said in situ sensor relating to said within-wafer uniformity and results predicted by said model.

74. (Previously Presented) The method of claim 73, wherein said tool comprises a polishing device.

75. (Previously Presented) The method of claim 73, wherein said tool comprises a plurality of processing resources, each of which includes an in situ sensor, and wherein data from one in situ sensor may be forwarded to another processing resource in real time during execution of said process.

76. (Previously Presented) The method of claim 73, further comprising the step of collecting data from an inline sensor; and

integrating said data collected from said inline sensor with said data collected from said in situ sensor before processing said subsequent wafer.

77. (New) A method for controlling one or more wafer properties in a semiconductor processing tool using data collected from an in situ sensor, said method comprising the steps of:

(1) generating recipe parameters relating to said one or more wafer properties according to a process model, where at least one of said one or more wafer properties comprises within-wafer uniformity, and wherein said model is used to predict wafer outputs;

(2) executing a process on a wafer with the tool according to said recipe parameters;

(3) collecting data relating to said one or more wafer properties during execution of said process with the in situ sensor;

(4) comparing said data collected by the in situ sensor relating to said one or more wafer properties with results predicted by said model;

(5) adjusting said process by modifying said recipe parameters in accordance with

results of said step (4).

(6) using said data collected by said in situ sensor in a process on a subsequent wafer to be executed by the tool.

78. (New) The method of claim 77, wherein said recipe parameters include a bulk removal step.

79. (New) The method of claim 77, wherein said one or more wafer properties comprises wafer thickness.

80. (New) The method of claim 77, further comprising the step of collecting data from an inline sensor; and

integrating said data collected from said inline sensor with said data collected from said in situ sensor before processing said subsequent wafer.